

10/15/98

10/15/98 U.S. PATENT OFFICE
 BIRCH, STEWART, KOLASCH & BIRCH, LLP
 GARY D. C. STEWART
 JOSEPH A. KOLASCH
 JAMES M. SLATTERY
 BERNARD L. SWEENEY*
 MICHAEL K. MUTTER
 CHARLES GORENSTEIN
 GERALD M. MURPHY, JR.
 LEONARD R. SYVENSSON
 TERRY L. CLARK
 ANDREW D. WEIKLE
 MARC S. WEINER
 JOE MCKINNEY MUNCY
 ROBERT J. KENNEY
 C. JOSEPH FARACI
 DONALD J. DALEY
 JOHN W. BAILEY
 JOHN A. CASTELLANO, III

OF COUNSEL:
 HERBERT M. BIRCH (1905-1996)
 ELLIOT A. GOLDBERG*
 WILLIAM L. GATES*
 EDWARD H. VANCE
 RUPERT J. BRADY (RET.)*

*ADMITTED TO A BAR OTHER THAN VA

BIRCH, STEWART, KOLASCH & BIRCH, LLP

INTELLECTUAL PROPERTY LAW
 8110 GATEHOUSE ROAD
 SUITE 500 EAST
 FALLS CHURCH, VA 22042
 U S A

(703) 205-8000

FAX: (703) 205-8050

(703) 698-8590 (G IV)

e-mail mailroom@bskb.com

web http://www.bskb.com

10/15/98 U.S. PATENT OFFICE
 SENIOR COUNSEL:
 ANTHONY L. BIRCH
 GARY D. YACURA
 THOMAS S. AUCHTERLONIE
 MICHAEL R. CAMMARATA
 JAMES T. ELLER, JR.
 SCOTT L. LOWE
 JOSEPH H. KIM, PH.D.*
 RICHARD S. MYERS, JR.*
 MARY ANN CARPIS
 MICHAEL J. CORNELISON*
 MARK J. NUEL, PH.D.
 ROBERT V. RACUNAS
 DARIN E. BARTHOLOMEW*
 REG. PATENT AGENTS:
 FREDERICK R. HANDREN
 ANDREW J. TELESZ, JR.
 MARYANNE LIOTTA, PH.D.
 KARI HATSUMI
 D. RICHARD ANDERSON
 STEVEN P. WIGMORE
 ESTHER H. CHIN
 MIKE S. RYU
 W. KARL RENNERT
 CRAIG A. McROBBIE
 PAUL C. LEWIS

Date: October 15, 1998

Docket No.: 2091-0169P-SP

Assistant Commissioner for Patents
 Box PATENT APPLICATION
 Washington, D.C. 20231

Sir:

Transmitted herewith for filing is the patent application of

Inventor(s): ITO, Wataru

For: IMAGE CONVERSION SYSTEM

Enclosed are:

- X A specification consisting of 11 pages
- X 1 sheet(s) of Formal drawings
- X An assignment of the invention
- Certified copy of Priority Document(s)
- X Executed Declaration X Original Photocopy
- A verified statement to establish small entity status under 37 CFR 1.9 and 37 CFR 1.27
- Preliminary Amendment
- Information Disclosure Statement, PTO-1449 and reference(s)

Other _____

The filing fee has been calculated as shown below:

LARGE ENTITY				SMALL ENTITY	
FOR	NO. FILED	NO. EXTRA	RATE FEE		RATE FEE
BASIC FEE	***** ***** *****	***** ***** *****	***** ***** \$790.00 *****	or	**** **** \$395.00 ****
TOTAL CLAIMS	1 - 20 =	0	x22 =\$ 0.00	or	x 11 = \$ 0.00
INDEPENDENT	1 - 3 =	0	x82 =\$ 0.00	or	x 41 = \$ 0.00
MULTIPLE DEPENDENT CLAIM PRESENTED		<u>no</u>	+270 = \$ 0.00	or	+135 = \$ 0.00
			TOTAL \$ 790.00		TOTAL \$ 0.00

X A check in the amount of \$ 830.00 to cover the filing fee and recording fee (if applicable) is enclosed.

____ Please charge Deposit Account No. 02-2448 in the amount of \$ _____. A triplicate copy of this transmittal form is enclosed.

____ No fee is enclosed.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. 1.16 or under 37 C.F.R. 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By _____

JOHN CASTELLANO

Reg. No. 35,094

P. O. Box 747

Falls Church, Virginia 22040-0747

IMAGE CONVERSION SYSTEM

BACKGROUND OF THE INVENTION

Field of the Invention

This invention relates to an image conversion
5 system for converting the format of digital image signal in
digital photographic service.

Description of the Related Art

As personal computers, internets and the like come
to be in wide use, there is an increasing trend toward
10 storing a picture as a digital image signal for later use.

In the case of a picture taken by use of
photographic film, in order to obtain a digital image
representing the picture, the image on the photographic
film is read out and an analog image signal obtained is
15 digitized. Recently laboratories and the like provide
service to read out images on photographic film of
customers, recording digital image signals representing the
images on media such as a CD-R and dispense the media to
the customers. The customer can edit and/or print the
20 digital images by loading the media in a personal computer.

In such a case, the digital image signal which the
laboratory dispenses to the customer is generally made with
the intention of making prints from the digital image
signal later at the laboratory. Accordingly, such an image
25 signal is generally recorded in an image format at a

relatively high resolution suitable for printing such as PhotoCD format or FlashPix format proposed by Eastman Kodak.

To the contrast, in the case of a digital camera, a picture is recorded in a memory as a digital image signal upon taking the picture and there is no necessity of digitizing the image. The user can directly enter the digital image signal recorded in the memory into a personal computer or directly transfer the digital image signal to a digital printer.

The format of the digital image signal recorded in the memory of the digital camera is generally different from the aforesaid PhotoCD or the like since in the case of the digital camera, it is required to store the largest possible number of image signals at a high quality in a memory having a limited capacity. As such a format for a digital camera, there has been known, for instance, Exif format proposed by "Shadan-houjin Nihon Denshi Kougyou Shinkou Kyoukai". Further there have been known digital cameras in which other nonstandard formats are employed in order to realize a higher image quality and a high compression rate.

There has been known a service to make a seal print by editing and modifying a digital image signal. Such a service is available for both a digital image signal obtained by reading an image on photographic film and a

digital image signal taken by a digital camera.

However for the provider of such a service, the digital image signal taken by a digital camera is advantageous over a digital image signal obtained by reading a picture on photographic camera since the former digital image signal does not require, for instance, an image scanner, which less cost the provider. Further when providing a service installing a seal print machine or the like, the cost of the machine can be greatly reduced by limiting the images handled by the machine only to those taken by digital cameras. It is expected that various services and/or systems only for images taken by digital cameras will spread with the spread of digital cameras.

On the other hand, photographic cameras using film is advantageous over digital cameras in that the image quality is higher and the camera is more economical. Especially digital cameras cannot be equal to a so-called film with lens in convenience. Accordingly, it cannot be considered that photographic cameras using film will go out of use as digital cameras spread. That is, the service provider must keep providing the same services also for images recorded on photographic film while reducing the cost by introduction of systems only for images taken by digital cameras.

However in the conventional services and/or systems, pictures recorded on photographic camera cannot

00172665-101500

enjoy the services unless digital signals representing the pictures are obtained at laboratories and are converted into digital signals in a format for digital cameras by a personal computer.

5

SUMMARY OF THE INVENTION

In view of the foregoing observations and description, the primary object of the present invention is to provide an image conversion system which reads out a picture recorded on photographic film and generating an image signal in the same format as an image signal taken by a digital camera, thereby enabling people possessing only a camera using photographic film to enjoy services only for digital cameras.

10

The image conversion system in accordance with the present invention comprises a digital image generation means which reads out an image on photographic film and generates a digital image signal representing the image, a format conversion means which converts the format of the digital image signal into a predetermined format used in a digital camera, and an image signal recording means which records the digital image signal in the predetermined format on a recording medium which can be loaded in the digital camera.

15

20

25

For example, the digital image generation means may be an image scanner. The predetermined format used in a digital camera may be, for instance, the aforesaid Exif

format or the like.

Further the recording medium which can be loaded in the digital camera may be, for instance, a smart medium (SSFDC), a PCMCIA card, a compact flash memory or the like.

5 It may be other various media which have been known or will be developed in the future.

By loading developed film in the image conversion system of the present invention, a digital image signal representing an image on the film which is recorded in a format used in a digital camera on a recording medium which can be loaded in a digital camera. Accordingly, pictures recorded on photographic camera can enjoy services only for digital cameras without use of a personal computer.

10
09172665-101508
15 This means that even if the service providers limit a part of their services or the objects of handling of their systems to digital cameras only, the customers does not undergo great inconvenience and the providers can reasonably reduce the cost of service by limiting the object of handling to digital cameras only.

20 Further customers who do not possess a personal computer but possess a digital camera and an ordinary camera can manage both image signals obtained by use of the digital camera and the ordinary camera on the same medium by use of the image conversion system of the present
25 invention.

BRIEF DESCRIPTION OF THE DRAWING

Figure 1 is a view showing an image conversion system in accordance with an embodiment of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

5 In Figure 1, an image conversion system 1 in accordance with an embodiment of the present invention comprises a film scanner 4 which reads out an image on developed photographic film 3 and generates a digital image signal representing the image, an image processing means 7 which carries out various image processings on the digital image signal generated by the film scanner 4, an image signal recording means 10 which records the digital image signal processed by the image processing means 7 on a recording medium 2 for digital cameras and a medium storage portion 11 in which virgin recording media 2 are stored.

10
15 The image conversion system 1 may be, for instance, in the form of a system comprising a personal computer loaded with exclusive image processing program, a film scanner and a peripheral devices such as a medium drive or in the form of an image conversion unit in which all the functions are incorporated in one housing.

20 The film scanner 4 is provided with a film set portion. The film set portion may be in such a form that the film is set to the film set portion by itself or the film cassette is set to the film set portion and the film is automatically drawn out from the cassette. Further the

film set portion may be in such a form that a film with lens is set to the film set portion and the housing of the film with lens is automatically disassembled and the film is drawn out.

5 In any cases, a reading portion 5 of the film scanner 4 reads out the image on the film 3 and the analog image signal thus obtained is digitized into a digital image signal by an A/D convertor 6 of the film scanner 4. At this time, the digital image signal is data expressed by
10 a color space of the film scanner.

 Then the digital image signal is transformed into a color space of an image taking system of a digital camera by color transformation means 8 of the image processing means 7, whereby an 8-bit digital image signal where each
15 of R, G and B are expressed in 8 bits is obtained. Further the 8-bit digital image signal is converted into a format for digital cameras, e.g. Exif, by a format conversion means 9 of the image processing means 7.

 The digital image signal in the converted format is
20 recorded on a recording medium 2 for digital cameras by the image signal recording means 10. When the user sets a recording medium together with the film 3, the image signal recording means 10 records the digital image on the recording medium set by the user, and when the user sets
25 only the film 3, the image signal recording means 10 records the digital image on a recording medium 2 of a

designated kind taken out from the medium storage portion 11. Then the recording medium 2 on which the digital image signal is recorded is dispensed to the user.

Various formats for digital cameras other than Exif are proposed by various digital camera makers. Accordingly it is preferred that the image conversion system 1 be arranged so that the user can select a format from a plurality of formats, for instance, displayed on a monitor. In this case, the format conversion means 9 converts the digital image signal into the format selected by the user which is input into the format conversion means 9 by a known means such as a keyboard.

Similarly it is preferred that the image conversion means 1 be arranged so that the recording medium 2 can be selected from a plurality of kinds of recording media such as a smart medium (SSFDC), a PCMCIA card, a compact flash memory and the like. In this case, a plurality of kinds of recording media are stored in the medium storage portion 11 and a recording medium of the kind selected by the user is taken out from the storage portion 11 and the digital image signal is recorded on the recording medium.

On the recording medium 2 dispensed from the image conversion system 1, the digital image signal is recorded in the same form as that obtained by taking a picture by a digital camera. Accordingly the recording medium 2 can be handled by a system such as a seal print machine for only

images taken by a digital camera, e.g., a system only for smart media.

When a memory card on a digital camera is set to the image conversion system 1 of this embodiment together with a film with lens, digital image signals representing pictures taken by the film with lens are recorded on the memory card. This permits all the pictures taken to be recorded on one memory card irrespective of photographing means and facilitates management of images.

Thus the image conversion system of the present invention makes it feasible to provide the same services for all the users irrespective of whether they possess a digital camera or whether they possess a personal computer.

What is claimed is;

1. An image conversion system comprising

a digital image generation means which reads out an
image on photographic film and generates a digital image
signal representing the image,

a format conversion means which converts the format
of the digital image signal into a predetermined format
used in a digital camera, and

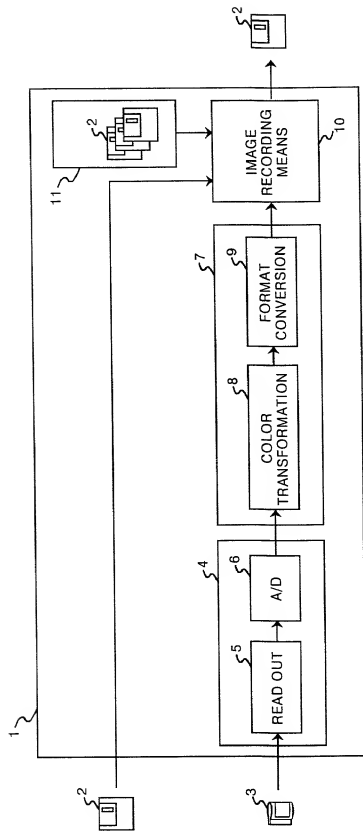
an image signal recording means which records the
digital image signal in the predetermined format on a
recording medium which can be loaded in the digital camera.

ABSTRACT OF THE DISCLOSURE

In an image conversion system, a film scanner reads out an image on photographic film and generates a digital image signal representing the image. The format of the digital image signal is converted into a predetermined format used in a digital camera, and the digital image signal in the predetermined format is recorded on a recording medium which can be loaded in the digital camera.

11

FIG. 1



Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

2091-169B

Declaration and Power of Attorney For Patent Application

特許出願宣言書及び委任状

Japanese Language Declaration

日本語宣言書

下記の氏名の発明者として、私は以下の通り宣言します。

As a below named inventor, I hereby declare that:

Wataru Ito

私の住所、私書箱、国籍は下記の私の氏名の後に記載された通りです。

My residence, post office address and citizenship are as stated next to my name. c/o Fuji Photo Film Co., Ltd.
798 Miyanodai, Kaisei-machi,
Ashigarakami-gun, Kanagawa-ken, Japan
(I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

下記の名称の発明に関して請求範囲に記載され、特許出願している発明内容について、私が最初かつ唯一の発明者（下記の氏名が一つの場合）もしくは最初かつ共同発明者であると（下記の名称が複数の場合）信じています。

" IMAGE CONVERSION SYSTEM "

上記発明の明細書（下記の欄でx印がついていない場合は、本書に添付）は、

the specification of which is attached hereto unless the following box is checked:

☐ 月 日に出発され、米国出願番号または特許協定条約国際出願番号を _____ とし、
(該当する場合) _____ に訂正されました。

☐ was filed on _____
as United States Application Number or
PCT International Application Number
_____ and was amended on
_____ (if applicable).

私は、特許請求範囲を含む上記訂正後の明細書を検討し、内容を理解していることをここに表明します。

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

私は、連邦規則法典第37編第1条56項に定義されるとおり、特許資格の有無について重要な情報を開示する義務があることを認めます。

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

Japanese Language Declaration

(日本語宣言書)

2091-169P

私は、米国法典第35編119条(a)-(d)項又は365条(b)項に基づき下記の、米国以外の国の少なくとも一カ国を指定している特許協力条約365(a)項に基づく国際出願、又は外国での特許出願もしくは発明者証の出願についての外国優先権をここに主張するとともに、優先権を主張している、本出願の前に出願された特許または発明者証の外国出願を以下に、枠内をマークすることで、示しています。

Prior Foreign Application(s)

外国での先行出願
(patent) 281807/1997

(Number)
(番号)

Japan

(Country)
(国名)

15/10/1997

(Day/Month/Year Filed)
(出願年月日)

Priority Not Claimed

優先権主張なし

☐

(Number)
(番号)

(Country)
(国名)

(Day/Month/Year Filed)
(出願年月日)

☐

私は、第35編米国法典119条(e)項に基づいて下記の米国外特許出願規定に記載された権利をここに主張いたします。

(Application No.)
(出願番号)

(Filing Date)
(出願日)

(Application No.)
(出願番号)

(Filing Date)
(出願日)

私は、下記の米国法典第35編120条に基づいて下記の米国外特許出願に記載された権利、又は米国を指定している特許協力条約365条(c)に基づき権利をここに主張します。また、本出願の各請求範囲の内容が米国法典第35編112条第1項又は特許協力条約で規定された方法で先行する米国外特許出願に開示されていない限り、その先行米国外特許出願提出日以降で本出願書の日本国内または特許協力条約国際提出日までの期間中に入手された、連邦規則法典第37編1条56項で定義された特許資格の有無に関する重要な情報について開示義務があることを認識しています。

(Application No.)
(出願番号)

(Filing Date)
(出願日)

(Status: Patented, Pending, Abandoned)
(現況: 特許許可済、係属中、放棄済)

(Application No.)
(出願番号)

(Filing Date)
(出願日)

(Status: Patented, Pending, Abandoned)
(現況: 特許許可済、係属中、放棄済)

私は、私自身の知識に基づいて本宣言書中で私が行なう表明が真実であり、かつ私の入手した情報と私の信じているところに基づく表明が全て真実であると信じていること、さらに故意になされた虚偽の表明及びそれと同等の行為は米国法典第18編第1001条に基づき、罰金または拘禁、もしくはその両方により処罰されること、そしてそのような故意による虚偽の表明を行えば、出願した、又は既に許可された特許の有効性が失われることを認識し、よってここに上記のごとく宣誓を致します。

I hereby claim the benefit under Title 35, United States Code, Section 119(e) of any United States provisional application(s) listed below.

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s), or 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code Section 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of application.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Japanese Language Declaration
(日本語宣言書)

2091-169P

委任状: 私は下記の発明者として、本出願に関する一切の手続きを米特許商標局に対して遂行する弁理士または代理人として、下記の者を指名いたします。(弁理士、または代理人の氏名及び登録番号を明記のこと)

TERRELL C. BIRCH (Reg. No. 18,382)
RAYMOND C. STEWART (Reg. No. 21,056)
JOSEPH A. KOLASCH (Reg. No. 22,463)
ANTHONY L. BIRCH (Reg. No. 26,122)

JAMES M. SLATTERY (Reg. No. 28,590)
BERNARD L. SWEENEY (Reg. No. 24,448)
MICHAEL K. MUTTER (Reg. No. 25,680)
CHARLES GORENSTEIN (Reg. No. 29,271)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith (first name and registration number)

GERALD M. MURPHY (Reg. No. 28,977)
LEONARD R. SVENSSON (Reg. No. 30,330)
TERRY L. CLARK (Reg. No. 32,844)
ANDREW D. MEIKLE (Reg. No. 32,868)

MARC S. WEINER (Reg. No. 32,181)
ANDREW F. REISH (Reg. No. 33,443)
JOE M. MUNCEY (Reg. No. 32,334)
C. JOSEPH FARACI (Reg. No. 32,350)

書類送付先

Send Correspondence to:

BIRCH, STEWART, KOLASCH & BIRCH, LLP
P.O. BOX 747
FALLS CHURCH, VA 22040-0747
TEL: (703) 205-8000

直接電話連絡先: (名前及び電話番号)

Direct Telephone Calls to: (name and telephone number)

BIRCH, STEWART, KOLASCH & BIRCH, LLP
TEL: (703) 205-8000

唯一または第一発明者名	Full name of sole or first inventor		Wataru Ito
発明者の署名	日付	Inventor's signature	Date
住所	Residence		October 9, 1998
国籍	Citizenship		Kanagawa-ken, Japan
私書箱	Post Office Address		Japan
第二共同発明者		Full name of second joint inventor, if any	
第二共同発明者	日付	Second inventor's signature	Date
住所	Residence		
国籍	Citizenship		
私書箱	Post Office Address		

(第三以降の共同発明者についても同様に記載し、署名をすること)

(Supply similar information and signature for third and subsequent joint inventors.)